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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,634	09/23/2003	David Stevenson Spain	465-009US	2179

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EXAMINER

SHEDRICK, CHARLES TERRELL

ART UNIT	PAPER NUMBER
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2687

DATE MAILED: 03/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/668,634	SPAIN, DAVID STEVENSON	
	Examiner	Art Unit	
	Charles Shedrick	2687	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12/21/05 have been fully considered but they are not persuasive.

Regarding claim 1 applicant argues that Dupray does not teach a method of deducing a signal strength of **a first signal** at a wireless terminal based on the transmit strength of **a second signal**, that is transmitted by said wireless terminal **140**; and estimating the location of said wireless terminal **140** based on said signal strength of said **first signal**, however, the examiner respectfully disagree. In order to deduce or infer from a general principle (i.e., such as basic arithmetic, algebraic manipulation, or some other type of deduction), if we know a parts of an equation and we are given 2 of the 3 variables we can thus deduce or even determine if necessary the unknown variable. Dupray teaches the relationship between transmit and receive signals in addition to a signal correlation of other variables such as path loss. Based on the relationships of the signals one can deduce or even determine missing information. Dupray further teaches using the signal strength information for location purposes.

Applicant further argues that Dupray does not teach or suggest “determining the signal strength of a forward signal at a wireless terminal based on the strength of an reverse signal transmitted by the wireless terminal”. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., determining the signal strength of a forward signal at a wireless terminal based on the strength of an reverse signal transmitted by the wireless terminal) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations

from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding claim 10 applicant argues that Dupray does not teach a method wherein **deducing** said signal strength of said **first signal** based on a signal-strength measurement of a **second signal** at the location where said **first signal** is transmitted; and estimating the location of said wireless terminal based on said signal strength of said first signal, however, the examiner respectfully disagree. In order to deduce or infer from a general principle (i.e., such as basic arithmetic, algebraic manipulation, or some other type of deduction) (i.e., first and second signals consisting of signals on the forward and reverse path of the same mobile to the same base station(s). Using reciprocity or the formulation of both measurements of the forward wireless signal(s) to a target MS and measurements of a reverse wireless signal(s) transmitted from the target MS to a base station can be utilized, if we know a parts of an equation and we are given 2 of the 3 variables we can thus deduce or even determine if necessary the unknown variable. Dupray teaches the relationship between transmit and receive signals in addition to a signal correlation of other variables such as path loss. Based on the relationships of the signals one can deduce or even determine missing information. Dupray further teaches using the signal strength information for location purposes.

Regarding claim 20 applicant argues that Dupray does not teach a method of **deducing** a signal strength of a **first signal** at a wireless terminal based on the attenuation of a **second signal**, that is transmitted by said wireless terminal; and estimating the location of said wireless terminal based on said signal strength of said **first signal**, however, the examiner respectfully disagree. In order to deduce or infer from a general principle (i.e., such as basic arithmetic,

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algebraic manipulation, or some other type of deduction) (i.e., based on the method shown to deduce or figure out $SRSS_{MS}$ one can clearly use the same method to deduce the first signal using the second signal above. Furthermore, once the signals are computed they are used in correlation with other signals in the signal processing subsystem to locate the mobile station, if we know a parts of an equation and we are given 2 of the 3 variables we can thus deduce or even determine if necessary the unknown variable. Dupray teaches the relationship between transmit and receive signals in addition to a signal correlation of other variables such as path loss. Based on the relationships of the signals one can deduce or even determine missing information. Dupray further teaches using the signal strength information for location purposes. For the reasons stated above the prior art teaches the claimed invention.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-7,10-16, and 19-26** is rejected under 35 U.S.C. 102(b) as being anticipated by **Dupray (U.S. Patent No. 6,249,252)**.

Consider **claim 1**, Dupray clearly discloses a method of deducing a signal strength of a first signal (i.e., $RRSS_{MS}$) at a wireless terminal **140 (figures 4 and 5)** based on the transmit strength of a second signal (i.e., signal transmitted to the base station, which is not clearly shown ,but is shown as a measured variable in the cited work of Dupray), that is transmitted by said wireless terminal **140**; and estimating the location of said wireless terminal **140** based on said

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signal strength of said first signal (i.e., based on the method shown to deduce or figure out $SRSS_{MS}$ one can clearly use the same method to deduce the first signal using the second signal above. Furthermore, once the signals are computed they are used in correlation with other signals in the signal processing subsystem to locate the mobile station 140) (column 25 line 63 - column 26 line 48, column 28 lines 59-66, and column 37 lines 12-30).

Consider claim 2, and as applied to claim 1 above, Dupray clearly discloses a method wherein deducing said signal strength of said first signal (i.e., $RRSS_{MS}$) is also based on the transmitted strength (i.e., IRPL instantaneous relative power level of the mobile station transmitter which is directly related to the transmitted power) of said first signal. (column 25 line 63 - column 26 line 48, column 28 lines 59-66, and column 37 lines 12 - 30).

Consider claim 3, and as applied to claim 1 above, Dupray clearly discloses a method wherein deducing said signal strength of said first signal (i.e., $RRSS_{MS}$) is also based on a signal-strength measurement for said second signal (i.e., $RRSS_{BS}$) at the location where said first signal is transmitted (i.e., first and second signals consisting of signals on the forward and reverse path of the same mobile to the same base station(s). Using reciprocity or the formulation of both measurements of the forward wireless signal(s) to a target MS 140 and measurements of a reverse wireless signal(s) transmitted from the target MS to a base station can be utilized.)(column 25 line 63 - column 26 line 48).

Consider claim 4, and as applied to claim 1 above, Dupray clearly discloses a method wherein deducing the said signal strength of said first signal, is also based on an attenuation (i.e. path loss on forward or reverse path) for said second signal between wireless terminal and the location where said first signal is transmitted (i.e., $SRSS_{ms}$ is a corrected indication of path loss

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(attenuation) and can be used to achieve a more robust correlation in the signal processing function. One path is illustrated, but Dupray clearly states that the same measurements could be used in the opposite direction)(**column 25 line 63 - column 26 line 48**).

Consider **claim 5**, and **as applied to claim 1 above**, Dupray discloses a method wherein estimating the location of said wireless terminal **140** comprises pattern matching (**abstract**) said signal strength of said first signal against a database that associates candidate locations for said wireless with predicted signal strength measurements for said first signal (**abstract, column 5 lines 50 –65, and column 51 line 50 – column 52 line 21**).

Consider **claim 6**, and **as applied to claim 1 above**, Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** is also based on a signal strength measurement of a third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations).

Consider **claim 7**, and **as applied to claim 6 above**, Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** is based on said signal strength of said first signal and said signal strength measurement of said third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations).

Consider **claim 10**, Dupray clearly discloses a method wherein deducing said signal strength of said first signal (i.e., $RRSS_{MS}$) based on a signal-strength measurement of a second signal (i.e., $RRSS_{BS}$) at the location where said first signal is transmitted; and estimating the location of said wireless terminal based on said signal strength of said first signal (i.e., $RRSS_{MS}$) (i.e., first and second signals consisting of signals on the forward and reverse path of the same mobile to the same base station(s). Using reciprocity or the formulation of both measurements of

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the forward wireless signal(s) to a target MS 140 and measurements of a reverse wireless signal(s) transmitted from the target MS to a base station can be utilized.)(column 25 line 63 - column 26 line 48).

Consider **claim 11**, and as applied to **claim 10 above**, Dupray clearly discloses a method wherein deducing said signal strength of said first signal (i.e., $RRSS_{MS}$) is also based on the transmitted strength (i.e., IRPL instantaneous relative power level of the mobile station transmitter which is directly related to the transmitted power) of said first signal. (**column 25 line 63 - column 26 line 48, column 28 lines 59-66, and column 37 lines 12 - 30**).

Consider **claim 12** and as applied to **claim 10 above**, Dupray clearly discloses a method of deducing a signal strength of a first signal (i.e., $RRSS_{MS}$) at a wireless terminal 140 (**figures 4 and 5**) based on the transmit strength of a second signal (i.e., signal transmitted to the base station, which is not clearly shown, but is shown as a measured variable in the cited work of Dupray), that is transmitted by said wireless terminal 140. (i.e., based on the method shown to deduce or figure out $SRSS_{MS}$ one can clearly use the same method to deduce the first signal using the second signal above. Furthermore, once the signals are computed they are used in correlation with other signals in the signal processing subsystem to locate the mobile station 140) (**column 25 line 63 - column 26 line 48, column 28 lines 59-66, and column 37 lines 12-30**).

Consider **claim 13**, and as applied to **claim 10 above**, Dupray clearly discloses a method wherein deducing the said signal strength of said first signal, is also based on an attenuation (i.e. path loss on forward or reverse path) for said second signal between wireless terminal and the location where said first signal is transmitted (i.e., $SRSS_{ms}$ is a corrected indication of path loss (attenuation) and can be used to achieve a more robust correlation in the signal processing

function. One path is illustrated, but Dupray clearly states that the same measurements could be used in the opposite direction)(**column 25 line 63 - column 26 line 48**).

Consider **claim 14**, and as applied to **claim 10 above**, Dupray discloses a method wherein estimating the location of said wireless terminal **140** comprises pattern matching (**abstract**) said signal strength of said first signal against a database that associates candidate locations for said wireless with predicted signal strength measurements for said first signal (**abstract, column 5 lines 50 –65, and column 51 line 50 – column 52 line 21**).

Consider **claim 15**, and as applied to **claim 10 above**, Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** is also based on a signal strength measurement of a third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations).

Consider **claim 16**, and as applied to **claim 15 above**, Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** is based on said signal strength of said first signal and said signal strength measurement of said third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations).

Consider **claim 19**, and as applied to **claim 10 above**, Dupray clearly discloses a method comprising removing the effects of fast fading (i.e., delay spread; random phase shift or Rayleigh Fading) (**column 2 line 56 – column 3 line 32 and column 26 lines 23-63**)

Consider **claim 20**, Dupray clearly discloses a method of deducing a signal strength of a first signal (i.e., $RRSS_{MS}$) at a wireless terminal **140** (**figures 4 and 5**) based on the attenuation (i.e., $SRSS_{MS}$) of a second signal, that is transmitted by said wireless terminal **140**; and estimating the location of said wireless terminal **140** based on said signal strength of said first

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signal (i.e., based on the method shown to deduce or figure out $SRSS_{MS}$ one can clearly use the same method to deduce the first signal using the second signal above. Furthermore, once the signals are computed they are used in correlation with other signals in the signal processing subsystem to locate the mobile station 140) (column 25 line 63 - column 26 line 48, column 28 lines 59-66, and column 37 lines 12-30).

Consider **claim 21**, and as applied to **claim 20** above, Dupray clearly discloses a method wherein deducing said signal strength of said first signal (i.e., $RRSS_{MS}$) is also based on the transmitted strength (i.e., IRPL instantaneous relative power level of the mobile station transmitter which is directly related to the transmitted power) of said first signal. (column 25 line 63 - column 26 line 48, column 28 lines 59-66, and column 37 lines 12 - 30).

Consider **claim 22**, and as applied to **claim 20** above, Dupray clearly discloses a method wherein deducing said signal strength of said first signal (i.e., $RRSS_{MS}$) is also based on a signal-strength measurement for said second signal (i.e., $RRSS_{BS}$) at the location where said first signal is transmitted (i.e., first and second signals consisting of signals on the forward and reverse path of the same mobile to the same base station(s). Using reciprocity or the formulation of both measurements of the forward wireless signal(s) to a target MS 140 and measurements of a reverse wireless signal(s) transmitted from the target MS to a base station can be utilized. (column 25 line 63 - column 26 line 48).

Consider **claim 23** and as applied to **claim 20** above, Dupray clearly discloses a method of deducing a signal strength of a first signal (i.e., $RRSS_{MS}$) at a wireless terminal 140 (figures 4 and 5) based on the transmit strength of a second signal (i.e., signal transmitted to the base station, which is not clearly shown, but is shown as a measured variable in the cited work of

Dupray), that is transmitted by said wireless terminal **140**(i.e., based on the method shown to deduce or figure out $SRSS_{MS}$ one can clearly use the same method to deduce the first signal using the second signal above) (**column 25 line 63 - column 26 line 48, column 28 lines 59-66, and column 37 lines 12-30**).

Consider **claim 24**, and as applied to **claim 20 above**, Dupray discloses a method wherein estimating the location of said wireless terminal **140** comprises pattern matching (**abstract**) said signal strength of said first signal against a database that associates candidate locations for said wireless with predicted signal strength measurements for said first signal (**abstract, column 5 lines 50 –65, and column 51 line 50 – column 52 line 21**).

Consider **claim 25**, and as applied to **claim 20 above**, Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** is also based on a signal strength measurement of a third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations).

Consider **claim 26**, and as applied to **claim 25 above**, Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** is based on said signal strength of said first signal and said signal strength measurement of said third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations)

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 8, 9,17,18,27,and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over **Dupray (U.S. Patent No. 6,249,252)** in view of **Okanoue et al. (U.S. Pub. No. US 2003/0064733 A1)**.

Consider **claims 8,17, and 27** and as applied to **claims 6,15, and 25**. Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** is based on a first signal and also based on a signal strength measurement of a third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations).

However, Dupray does not clearly disclose if indeed the location of said wireless terminal is based on the absolute magnitude of the difference between said signal strength of the first signal and said signal strength of the third signal.

In the same field of endeavor Okanoué et al. discloses a method of estimating the location of a mobile terminal 4 (figure 1) based on the absolute value of the difference between the reception level (i.e., signal strength) of multiple signals (**abstract, paragraph 0079, and figure 5**).

Therefore it would have been obvious to a person of ordinary skill in the art to calculate the absolute value of the difference between a first signal strength and a third signal strength as

taught by Okanoué et al. in the method of Dupray in order to improve the mathematical derivations of signal strength.

Consider **claims 9,18, and 28** and **as applied to claims 6,15, and 25**. Dupray clearly discloses a method wherein estimating the location of said wireless terminal **140** comprises generating a two-dimensional probability distribution for the location of said wireless terminal (i.e., incorporating location estimates based on a joint PDF)(**column 54 lines 18-37**). Dupray further discloses a method wherein estimating the location of said wireless terminal **140** is based on a first signal and also based on a signal strength measurement of a third signal (**column 37 line 57-column 38 line 23**)(i.e., signal strength measurements can be made from multiple base stations).

However, Dupray does not clearly disclose if indeed the location of said wireless terminal is based on the generating a two-dimensional PDF for the location of said wireless terminal based on the absolute magnitude of the difference between said signal strength of the first signal and said signal strength of the third signal.

In the same field of endeavor Okanoué et al. discloses a method of estimating the location of a mobile terminal 4 (figure 1) based on the absolute value of the difference between the reception level (i.e., signal strength) of multiple signals (**abstract, paragraph 0079, and figure 5**).

Therefore it would have been obvious to a person of ordinary skill in the art to generate a two -dimensional PDF as taught by Dupray based on the absolute value of the difference between a first signal strength and a third signal strength as taught by Okanoué et al. to improve the mathematical derivations of signal strength.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Shedrick whose telephone number is (571)-272-8621. The examiner can normally be reached on Monday thru Friday 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kincaid Lester can be reached on (571)-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Shedrick
AU 2617
February 21, 2006


NICK CORSARO
PRIMARY EXAMINER